

How to Choose a Subwoofer

Subwoofers are individual speaker units that are dedicated solely to reproducing low-frequency sounds. While this may not be the most glamorous job in a stereo or home cinema system, the subwoofer is a crucial part of your overall listening experience. There are very few loudspeakers in this world that really produce good bass. There are plenty that produce a lot of bass – but doing it right is another factor.



How do we come to this conclusion? The fact is that to produce a lot of bass you need to move a lot of air. Just look back at the size of speakers in years gone by – they were often referred to as ‘coffins’ because of their size. The cost factor must also be considered. Building a large enclosure that will ‘thump’ out the bass is not overly difficult or for that matter all that expensive. However, getting it right is another story.

It is also true that early recordings lacked a lot of bass. Some vintage recordings virtually had no low bass information. Producers today use some very sophisticated computer programs to not only eliminate the hiss, pops and clicks but to

actually ‘add’ some bass! For a moment, just imagine how many disgruntled radio-gram owners there would have been if recordings had been made to higher standards! Speaker replacements would have been a regular thing.

High Quality Recordings Arrive

Some of us ‘oldies’ remember well when in the mid 70’s a company called Sheffield Lab in the USA introduced their first ‘direct-cut’ albums which set a new standard in high fidelity recordings. These were soon followed by releases by Mobile Fidelity with their Original Master Recordings, which took many of the old favourites and reproduced them on ‘virgin’ vinyl. Wow! They sounded so good, that it was difficult to play the others in the collection – and yes the bass was extra-ordinarily good. The track by Thelma Houston “I’ve Got the Music in Me” was a favourite of most hi-fi salesmen.

However, to get more from our ‘normal’ recordings some forward thinking manufacturers (really hi-fi enthusiasts who have gone over the edge) soon started playing around with stand-alone subwoofers. Some of the early names included Audio-Pro with their ‘Ace-Bass’ active Subwoofer; the Canton Plus C which was available in both passive and active forms. Designer Ken Kreisel, who is often referred to as the modern day father of the subwoofer was also on the scene in the mid 70’s with his M&K brand.

Home Cinema Makes Its Mark

However, progress in design has rapidly improved with the advent of Home Cinema. So much so that the most common surround sound processing

available today – Dolby Digital 5.1 and DTS - assume that you already have a subwoofer as part of your system. Just in case you didn't already know, the '5.1' in 'Dolby Digital 5.1' refers to the five channels of full range material, plus the single channel (.1) of low frequency information specifically recorded to be handled by the subwoofer. Dolby Digital 6.1, 7.1 are the same but with extra rear channel speakers.

Modern day movies are known for their often exceptional special effects, but could you imagine the result if the sound engineers didn't utilise the bass response to its full effect? True, all areas of the sound track are important, but it is the low frequencies that make the whole experience feel real. Just think of some of the movies that have used this to the full – movies like Top Gun and the Terminator series really made an impact. You may have some other favourites.

So when you watch this movie at home, the soundtrack remains intact. Play it back through your television speakers and the impact is lost. However, play it back on a 5.1 or 7.1 system with a subwoofer and it is a completely different experience!

Getting it Right

The first thing that you need to realise is that subwoofers are not created equal. Not only does the price vary dramatically, but more importantly the quality. The quality of the sub that you require is going to depend on a number of factors.

- The first, and most obvious, is the frequency response. The typical frequency range of (perfect) human hearing is between 20-20kHz. A subwoofer is responsible only for the very lowest end of this frequency range. Although some subwoofers claim very low frequency responses of under 10Hz, which you can't actually hear, most are above 20Hz. The sub's low-pass crossover filters out all sounds above a certain frequency, and

usually this crossover point is user-adjustable.

- Distortion is also important or rather the lack of distortion. When the subwoofer cone moves in and out and dramatically so during heavy bass passages, distortion is introduced. The better the amplifier usually found with an improved damping factor and higher current, the more control is exercised over the driver and thus distortion is reduced. Obviously, lower distortion is better.



- Power output and size also matter. If you play your system loud, or have a large area to fill you will need a subwoofer that will play loud enough to meet these demands. Experience has shown that many people think that because they either don't have the funds for a better subwoofer or don't understand the concept properly, that a cheaper model will still be OK. It usually won't. Remember, we are dealing with the laws of physics and smaller budget priced units cannot fill the shoes where a larger more powerful product is required.
- Placement. Low-frequency sound waves are omni-directional, so you have a great deal of flexibility when it comes to subwoofer placement. However, any subwoofer will give more bass when located in a corner

where the wall is usually stronger and less bass when located near an opening like a door.

- Down-firing and front-firing. Many subwoofers feature a single woofer cone that moves back and forth to create low-frequency sound waves. The subwoofer cone is usually mounted either on the bottom of the subwoofer cabinet (down-firing) or on one of the sides (front-firing). Neither method is intrinsically better — it all depends on the sub's specific design and on your own personal preferences. Some of the top subs combine both front firing and forward firing designs in the one box!
- Enclosure is another word for the cabinet that houses a speaker. By altering the design of the speaker cabinet, you can change the performance and output of a subwoofer. The two types of enclosures that are available are bass reflex and acoustic suspension. Acoustic suspension subs use a sealed box to provide bass response. This method reproduces tight, accurate bass, but typically requires more amp power than a bass reflex design.

Bass reflex enclosures add a "tuned" port to increase and extend the bass response. The port is basically a hole in the cabinet that releases some of the energy created by the inward movement of the woofer cone. Bass reflex subs are more power-efficient than acoustic suspension models, but they sacrifice some accuracy in exchange for the added punch.

- The goal should be better bass, not more bass! It is not difficult to produce a sub that will produce low notes, and which will play loud, provided you are not looking for a clean, defined sound. Many (most?) inexpensive subwoofers tend to produce a very monotone bass. Plenty of it, but all the bass notes sound the

same. Listen to various subwoofers on music, rather than just movies.



Many consumers are discovering the bass that exists on their CD collection. They are also discovering that it is more difficult to get a sub that will do a good job of reproducing music than it is to reproduce the demands of movies. You may get away with a 'boomy' sub with movies, but it will never do for music. In fact a sub that does boom while listening to music can be very uncomfortable to listen to, and you will probably turn it off.

- The price is usually a good guide to performance and there are definitely some local products that deliver an excellent price/performance ratio. Brands that we stock that fit this bill are Aaron, Sonique and SuBsonic with prices usually around \$1000. These models will perform very well in most medium priced systems. If your system is more exotic, then you may need to double or even triple this amount! For more modest requirements or systems, then there are some good smaller units priced between \$650 and \$800. If you think you only need to spend \$500 or less – forget it! You are just kidding yourself and either haven't had a proper demonstration of the differences or have unrealistic expectations. If funding is a problem, wait a while until you can spend the extra.

Conclusion

The quality of your existing system and the size of your room are very important when choosing a subwoofer. If you have a top-notch Home Cinema you will be doing it a great injustice to try to get away with a cheap, low grade sub. Also the larger the area, a better and more powerful sub will be required, with the emphasis on the word better. Your present speakers should also influence the final choice.

Most large floor-standing speakers deliver good bass response. Still, if you're using them in a home cinema, or if you demand rich, full sound from your stereo music, plan on including a powered subwoofer for an added dose of really deep bass content. Bookshelf speakers have a more difficult time reproducing lower frequencies and, in general, provide less bass response. For these speakers, the extra punch of a subwoofer is crucial.

The market today sees an avalanche of brands available to the consumer. Understandably, this can be very confusing for the majority. So where do you start? Easy! In a shop that specialises in audio visual systems, has dedicated staff who are able to explain the differences and who can give a meaningful demonstration from a number of respected brands. So, what constitutes a respected brand? Simply the opposite to a 'no-name' brand! Respected brands usually have brochures and a web site available for you to visit. Most will have also had their products reviewed in the press in some way or another. If the brand you are considering cannot meet even the basics listed here, then choose something else that does!



Some satellite speaker systems available from Audio Trends include a subwoofer or bass module. These system components are engineered to match each other perfectly.

Final piece of advice is to listen. Listen to several models if you are unsure, even ones costing much more than you plan on spending. This will give you a reference point and help you determine what the differences really are between the various models. This will give you confidence in yourself and you may even be surprised at what you actually hear.

Audio Trends have had a long association with several subwoofer manufacturers dating back to the late 70's. We are ready and willing to help you with the right subwoofer choice.

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